Fiscal Impact Analysis for a Smart Growth Zoning Strategy:

A Study of West Campus University Neighborhood Overlay District

by

Kyusuk Cho, B.S.

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APPROVED BY

SUPERVISING COMMITTEE:

Supervisor: **Robert Paterson**

Michael Oden

Dedication

For my parents

For all of their patience, support, rosary, and love

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I thank my supervising committee—Dr. Robert Paterson and Dr. Michael Oden—for their guidance and assistance to this report.

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Abstract

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Kyusuk Cho, M.S.C.R.P.

The University of Texas at Austin, 2008

SUPERVISOR: Robert Paterson

This report reviews the cost of urban sprawl and shows the fiscal impact of smart growth. The report then focuses on the West Campus University Neighborhood Overlay (UNO) District in Austin, Texas, and it analyzes and estimates the fiscal impact on the City of Austin. Through fiscal impact analysis, it examines the contribution of the UNO District to the fiscal position of the City of Austin. As a result, this report gives the City of Austin fiscal reasons for redevelopment based on the smart growth scenario.

This report begins with showing the cost of urban sprawl. Then, it reviews the history,

principles, and policies of smart growth. The following section demonstrates the fiscal impact of smart growth. Lastly, the case of the West Campus area is examined by fiscal impact analysis.

The result after the analysis shows the fiscal impacts on the City of Austin from both sides of budget, including expenditures and revenues. The revenues received from the residents of the area increased due to the sudden jump in property value, growth population, housing constructions, and mixed-use development. However, the costs also increased due to the needs for public services.

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I. Introduction

In order to prevent the further spread of the consequences of urban sprawl – a land development pattern in 20th century America – many municipalities, including Austin, Texas, have supported smart growth initiatives. The initiatives usually induce redevelopment and/or denser development and provide more housing opportunities and choices. Municipalities support high-density residential development, not only because it provides new housing to the community, but also because it increases the tax revenue from the community.

The financial benefits to a municipality are new tax revenues from new residents and increased property values of the development area. Likewise, financial costs for providing public service and infrastructure also increase. Then, what is the benefit of smart growth on municipal finance?

This study aims to understand the difference between the revenues and the costs by the fiscal impact analysis method. A municipality must pay attention to this difference in order to provide an appropriate level of public service to its residents. The level of public services and how to allocate resources are directly determined to the need to accommodate population and economic growth. The difference is also important to planners in terms of land use approval process. Typical planners show a tendency not

to understand the budget process and how this is tied to land use approval process. However, when the land use planning goal correlates the budgeting goal, planners are able to reach optimal decisions in land use approval.

To this end, the West Campus area of Austin, Texas is selected to examine the fiscal impacts of redevelopment caused by adopting Ordinance 040902-58 – University Neighborhood Overlay (UNO) District. This study is remarkable for two reasons. First, the study area is an example of undergoing rapid growth by a land use regulation change. The zoning regulation of Austin had limited dense development in the area till 2004, so the housing market had been dormant for a long time. The new ordinance, however, allowed the increase of the height limit up to 175 feet and the maximum density up to 10 stories. Under the new ordinance, the housing market faces the real demand and is responding. The City of Austin needs to react to this rapid growth through a planning perspective. Second, the study area is one of most compatible examples of Austin's Smart Growth Initiatives. According to the City of Austin, the Initiatives were made in order to guide and shape Austin's future growth to both minimize the negative environmental, economic, and social impacts and to preserve the best aspects of life in our region. It has three major goals: Determine How and Where We Grow, Improve Our Quality of Life, and Enhance Our Tax Base

(The City of Austin, 1995).

This report begins with reviewing the literature on the cost of urban sprawl and its effects to the municipal fiscal condition. It then reviews the history and principles of smart growth as an alternative development pattern to urban sprawl. The following demonstrates the fiscal impact of smart growth which can be more beneficial than urban sprawl. Lastly, the study of the West Campus area, as an example of smart growth development, is examined by fiscal impact analysis. The analysis gives us better and easy understanding impacts of land use change.

II. The Cost of Urban Sprawl

The cost of urban sprawl has been examined in number of fields during the last few decades. Snyder and Bird played a key role in defining urban sprawl in the American life style. They defined urban sprawl as very low-density suburban development, usually on previously undeveloped land. This type of development was based on the American dream of low density residential lifestyle, easy access to open space, relatively short commuting times for those who both live and work in the suburbs, ease of movement, and the ability to separate oneself spatially from problems associated with poverty and the inner city (Snyder & Lori Bird, 1998).

Though it had benefits at the first stage, generally speaking, urban sprawl has proven to be very inefficient and unfavorable to cities. Property tax generated by suburban residential land development is often less than public service costs to the residents; therefore, it has bad effects on the fiscal condition of cities and suburban jurisdictions. Also, we have seen many social problems from suburban land development. Thus, many studies have been conducted to evaluate the costs of urban sprawl qualitatively or quantitatively, sometimes in both. The studies are not specific enough to apply to the West Campus case. They were carried out under different locations, times, and assumptions. Researchers adopted a comparison between the sprawl development

scenario and the compact development scenario, and they defined those scenarios by their own standard, creating inconsistencies between studies. However, reviewing the researches will advise us on how to find the way to calculate the fiscal impact in the case of West Campus, for the studies definitely quantified most of the potential impacts of land development, and the researchers suggested ways to quantify fiscal impacts of smart growth.

The study of bad effects of urban sprawl has long been considered an important element in the urban planning field. In 1974, the Real Estate Research Corporation issued a report to the Council on Environment Quality, to the Department of Housing and Urban Development, and to the Environmental Protection Agency to investigate the possible cost burdens and adverse environmental effects of urban sprawl. This report attempted to quantify costs of urban sprawl. The report concluded, for a fixed number of households, that urban sprawl is the most expensive form of residential development in terms of direct capital and operating costs, environmental effects, and personal effects. According to their capital costs summary, Table 1, the estimate of low density sprawl development was 140% of the estimate for planned mix development and 174% of high density planned development (The Real Estate Research Corporation, 1974).

Table 1 Community Cost Analysis Capital Costs Summary

(Community Development 10,000 Units)

Cost Category	Planned Mix	Low Density Sprawl	High Density Planned
Open Space/Recreation	$2,968	$2,684	$2,968
Schools	$45,382	$45,382	$45,382
Public Facilities	$16,216	$16,615	$16,304
Transportation – Streets and Roads	$27,077	$37,965	$22,862
Utilities	$33,227	$61,974	$22,432
Residential	$214,172	$320,400	$160,300
Land	$18,491	$29,539	$16,814
Total	$357,533	$514,559	$287,062

Resource: Real Estate Research Corporation, 1974.

For the discussions and debates about urban sprawl and its effects, the Transportation Research Board used an enormous amount of data cumulated more than 5 years of research led by Rutgers University. We need to pay attention to this book of the Transportation Research Board, because it included the impact of sprawl on the personal costs as well as the impact of sprawl on resources (Transportation Research Board, 2002).

Examining the personal costs of sprawl, such as travel miles and costs and quality of life, the report presented the comparisons between the controlled- and noncontrolled-growth scenarios with empirical evidence. Table 2 and Table 3 show that controlled-

growth scenario reduced total travel miles and travel costs, but Table 4 shows that there was little difference in quality of life between two development patterns. As a conclusion, the Transportation Research Board found complexity in quantifying personal costs of sprawl (Transportation Research Board, 2002). Thus, in my study, elements which have difficulty in quantifying, such as personal costs of sprawl, will be excluded.

Table 2 Additional Daily Travel Miles in Privately Owned Vehicles and Transit

	Uncontrolled-Growth Scenario			Controlled-Growth Scenario			Difference—Savings		
	POV Miles	Transit Miles	Total Travel Miles	POV Miles	Transit Miles	Total Travel Miles	POV Miles	Transit Miles	Total Travel Miles
United States	1,193,526	34,842	1,228,368	1,137,329	41,479	1,178,809	56,197	-6,637	49,559

Resource: Woods & Poole, 1998.

Table 3 Additional Daily Travel Costs in Privately Owned Vehicles and Transit

	Uncontrolled-Growth Scenario			Controlled-Growth Scenario			Difference—Savings		
	POV Costs	Transit Costs	Total Travel Costs	POV Costs	Transit Costs	Total Travel Costs	POV Costs	Transit Costs	Total Travel Costs
United States	938,861	47,746	986,608	905,281	57,256	962,537	33,581	-9,510	24,071

Resource: Woods & Poole, 1998.

Table 4 Quality of Life Index for New Residents

	Uncontrolled Growth			Controlled Growth			Difference
	Developed	Undeveloped	All	Developed	Undeveloped	All	All
United States	3.11	2.85	3.00	3.10	2.85	3.01	0.00

Resource: Burchell et al, 1998.

After finding much costs of urban sprawl on resources, there have been studies about fiscal impacts of alternative development patterns to compare with those of urban sprawl. Burchell, Downs, McCann, and Mukherji (2005) treated costs of sprawl and organized past research and data. They evaluated a sprawl development scenario which was able to accommodate 53 million residential and non-residential units from 2000 to 2025, and compared it with the compact development scenario which added more units into urban areas with higher density. Table 5 summarizes their findings in fiscal impact under two development patterns. In Table 5, both patterns have negative impact, but it shows compact growth scenario is better in annual new fiscal impact.

Table 5 Annual Net Fiscal Impact under Sprawl and Compact Growth Scenarios

2000-2025, in $million	Sprawl Growth Scenario			Compact Growth Scenario			Difference Compact Minus Sprawl
	Costs	Revenues	Impact	Costs	Revenues	Impact	
United States	143,242	99,389	-43,788	139,190	99,544	-39,583	4,205

Resource: Center for Urban Policy Research, Rutgers University.

From reviewing cost of community services studies, I found why both development patterns have negative fiscal impact. Cost of community services studies examine the interplay among land use and local spending and revenues. According the America Farmland Trust, usual residential land use has negative impact, because revenues from residential development often do not pay for public service costs which residents receive from the municipality. This is the why we need balance of land use types, among residential uses, industrial uses, commercial uses, agricultural uses, etc (American Farmland Trust, 2005).

In conclusion, almost every study indicated urban sprawl has been the dominant growth pattern in U.S. metropolitan areas. Also, many studies showed higher costs of urban sprawl patterns compared to alternative scenarios. Urban sprawl was shown to consume more land, infrastructure and public services than the compact land development scenario. Therefore, it affected fiscal conditions of cities, required commuters extended travel distance, and caused social problems.

III. History and Principles of Smart Growth

The cost of urban sprawl has affected communities across the United States. Communities tried to find strategies to reduce urban sprawl and to develop their communities into better ones. Smart growth is one of those strategies that emphasizes issues within the city that tend to be overlooked, such as the high quality of life, efficient use of land, economic competitiveness, vibrant neighborhoods, and environmental protection. To guide this report, it will be helpful to briefly review the history and principles of smart growth.

1. History of Smart Growth

We can find traces of smart growth from compact city theories and policies. Hall mentioned Le Corbusier, in the 1930s, had answered the famous paradox: we must decongest the center of our cities by increasing their density. Le Corbusier suggested a compact city built high on a small part of the total ground area as an answer to improving circulation and to increasing the amount of open space at the same time (Hall, 2002).

In the 1970s, Dantzig and Saaty proposed the general plan for a compact city in order to minimize vertical and horizontal traveling distance, resulting in reduced energy

expenses. To give a visual image of the first stage of the plan, one could say that the plan’s shape is similar to a stack of cylinders, gradually decreasing in diameter. The plan has a 250,000 first-stage population in a building of 240 feet high (8 levels) and 8,840 feet in diameter (Dantzig and Saaty, 1973).

Other Scholars, policymakers, urban planners, and developers have advanced different concept of a compact city. It increases the efficiency of urban land use, realizes economy of scale, and preserves the city’s surrounding area with green space. There is a thread of connections between compact city theories and smart growth that both pursue efficient and sustainable land use by density control in central areas.

QuantEcon, Inc. saw the term “smart growth” as a recent one, but it assumed that the practical origin of smart growth in the United States was the adoption of statewide planning policies by a few states from the 1970s, such as Hawaii, Vermont, Oregon, Washington, and Tennessee. These five states made either statewide legislation or played a centralized role for the state in the land-use planning process. QuantEcon, Inc. also pointed out the Urban Growth Boundary (UGB) because the use of UGBs to geographically contain growth is probably the most effective and symbolic smart growth implementation tool. A number of other states, such as California, Kentucky, Colorado, and Pennsylvania made strong local regulations which did more than

reserve land for preservation purposes (QuantEcon, 2002).

The Smart Growth Network (SGN) claimed a role of smart growth from the early 1990s. Numerous national organizations recognized the need of smart growth implementations and promoted its ideas. In 1996, the U.S. Environmental Protection Agency (EPA) joined with several non-profit and government organizations to form SGN. The Network, now a broad coalition of 32 organizations that support smart growth, includes environmental groups, historic preservation organizations, professional organizations, developers, real estate interests, and local and state government entities (The Smart Growth Network, 1996).

2. Principles of Smart Growth

As a definition of smart growth, SGN (2002) stated the following:

> Smart growth is development that serves the economy, community, and the environment. It provides a framework for communities to make informed decisions about how and where they grow. Smart growth makes it possible for communities to grow in ways that support economic development and jobs; create strong neighborhoods with a range of housing, commercial, and transportation options; and achieve healthy communities that provide families with a clean environment. (p. i)

It also developed a set of ten principles:

Table 6 Smart Growth Principles

1. Mix Land Uses Mixing land uses—commercial, residential, recreational, educational, and others—in neighborhoods or places that are accessible by bike and foot can create vibrant and diverse communities.
2. Take Advantage of Compact Building Design Compact building helps create the convenient neighborhood centers that people want. Compact building design also presents opportunities to absorb growth and development in a way that uses land more efficiently.
3. Create a Range of Housing Opportunities and Choices By creating a wider range of housing choices, communities can begin to use their infrastructure resources more efficiently, better accommodate the housing needs of all residents, and help aging citizens remain in their home.
4. Create Walkable Neighborhoods Walkable communities are integral to achieving the goals of smart growth because they enhance mobility, reduce negative environmental consequences, strengthen economies, and support stronger communities through improved social interaction.
5. Foster Distinctive, Attractive Communities with a Strong Sense of Place Smart growth seeks to foster the types of physical environments that create a sense of civic pride, and therefore support a more cohesive community fabric. As a result, economic benefits accrue as well; high-quality communities with architectural and natural elements that reflect the interests of all residents are more likely to retain their economic vitality and value over time.
6. Preserve Open Space, Farmland, Natural Beauty, and Critical Environmental Areas Open space supports smart growth goals by bolstering local economies, preserving critical environmental areas, providing recreational opportunities, and guiding new growth into existing communities. Preservation of open space can have a profound impact on a community's quality of life, and therefore a region's economic prosperity.
7. Strengthen and Direct Development towards Existing Communities By encouraging development in existing areas, communities benefit from a stronger tax base, closer proximity of jobs and services, increased efficiency of already developed land and infrastructure, reduced development pressure in fringe areas, and preservation of farmland and open space.
8. Provide a Variety of Transportation Options Communities are increasingly seeking choices in housing, shopping, communities, and transportation—particularly a wider range of transportation options—in an effort to improve overwhelmed transportation systems.

Table 6 (continued)

9. Make Development Decisions Predictable, Fair, and Cost Effective For smart growth to flourish, state and local governments must make an effort to make development decisions that support innovation in a more timely, cost-effective, and predictable way for developers.
10. Encourage Community and Stakeholder Collaboration in Development Decisions Growth can create great places to live, work, and play—if it responds to a community's own sense of how and where the community wants to grow. A key component of smart growth is to ensure early and frequent involvement of all stakeholders to identify and address specific needs and concerns.

Resource: SGN, 2002.

IV. Fiscal Impacts of Smart Growth

Land use changes, under urban sprawl or smart growth principles, inevitably have various effects on the relevant area. Residents of an area have their own interest in how the changes will affect their local governments. Public officials of local governments must anticipate the amount of public services needed to accommodate land development projects, zoning changes, annexations, or any other land use changes. Thus, the officials try to project the populations due to land use changes, infrastructure fees and service costs to the development area. For example, the officials strive to display the number of public employees serving the new residents and the number of municipal facilities accommodating the changes. They also try to calculate the revenues gained by these changes.

Studies on the costs of sprawl and the benefits of smart growth helped to proceed with this report, narrowing down to the focus on the fiscal impacts of smart growth. Chapter 2 identified that fiscal impacts on municipal economy are one of the many costs of urban sprawl, and expected land developments under the smart growth scenario would diminish the budgetary deficit of cities. This chapter shows the fiscal impacts of smart growth by fiscal impact analysis.

1. Fiscal Impact Analysis

Planners and economists have made many evaluative tools to estimate the impacts of development, and fiscal impact analysis, introduced in the 1970s, is one of them, such as cost-revenue analysis, cost-benefit analysis, or cost-effectiveness analysis. Kotval and Mullin explained its purpose was to seek to connect planning and local economics by estimating the public costs and revenues that result from property investments. That is, it brings a realistic sense of the cots of growth into the planning discussion, and it helps public officials link planning to the local annual budget (Kotval & Mullin, 2006). Though fiscal impact analysis itself is a pretty tentative tool, in some cases, a necessary consideration should be taken into account of whether a local government approves a land use plan or not. As one of necessary considerations for a land development process, many developers also operate fiscal impact analysis. Elmer, Thorne-Lyman, and Belzer explained this situation that fiscal impact analysis can function as a dialogue between developers and local governments for infrastructure payments and other concessions made as a requirement for development approvals (Elmer, Thorne-Lyman, & Belzer, 2006).

Budgeting of local governments is very comprehensive and complex, and therefore hard to define in a simple way; hence, what the budgetary consequence of one factor

is depends on how we make conditions. This report mostly adopts the definition and the conditions of fiscal impact analysis from those of Burchell and Lostokin's. According to Burchell and Listokin (1978), "Fiscal impact analysis is a projection of the direct, current, public costs and revenues associated with residential or nonresidential growth to the local jurisdiction(s) in which this growth is taking place" (p. 1).

The application of the tool depends on the person, and Burchell used its narrowest definition as a financial auditing tool calculating only net local public costs and revenues. He ignored all other non-fiscal costs or benefits and costs which might be conferred differentially, and he aimed to provide a fiscal foundation for land development but not to serve as a surrogate for the latter. Burchell made five assumptions in developing fiscal impact analysis. First, fiscal impact analysis considers only direct impacts which are the primary costs and the immediate revenues. Indirect impacts are not treated because it is impossible to predict accurately the secondary consequences of growth. Also, what is difficult to predict is the recurring potential for double counting when primary and secondary impacts are viewed at the same time. Second, fiscal impact analysis examines current costs and revenues. It calculates financial effects by considering the current costs and revenues such

facilities would generate if they were completed and operating today. Third, fiscal impact analysis treats public costs and revenues. It does not consider private costs of public actions. Fourth, costs include operating expenses, either directly incurred by a public jurisdiction or paid to others as a result of a specific development. Revenues comprise all monies a government receives from external sources as a result of development. Lastly, fiscal impact analysis is concerned with the cost and revenue implications derived from population and/or employment change. These changes are broadly defined as residential and/or nonresidential entrance into or departure from a community (Burchell & Listokin, 1978).

2. Fiscal Impacts of Smart Growth

Chapter 2 provided examples of possible fiscal impacts of urban sprawl; however, the fiscal impacts of smart growth are presumably more positive. Local governments that provide public services to their residents wish to take advantage of the existing infrastructure, which is fiscally better than constructing new infrastructure for new residents. Existing residents usually do not like to contribute the cost of public services generated by new development which may appear as property tax increases. That is, local governments and existing residents prefer redevelopment in the areas

that have set sufficient infrastructure. New residents also prefer redevelopment when the burden of possible impact fees is less heavy for them. The redevelopment scenario of smart growth follows this viewpoint. The scenario shows more efficient growth and wishes to satisfy possible interests by shifting some urban edge development into previously developed areas with more density.

V. A Study of the West Campus University Neighborhood Overlay District

Figure 1 UNO Overlay Planning Area within West Campus Neighborhood Area

Resource: Cotera+Reed Architects, 2004.

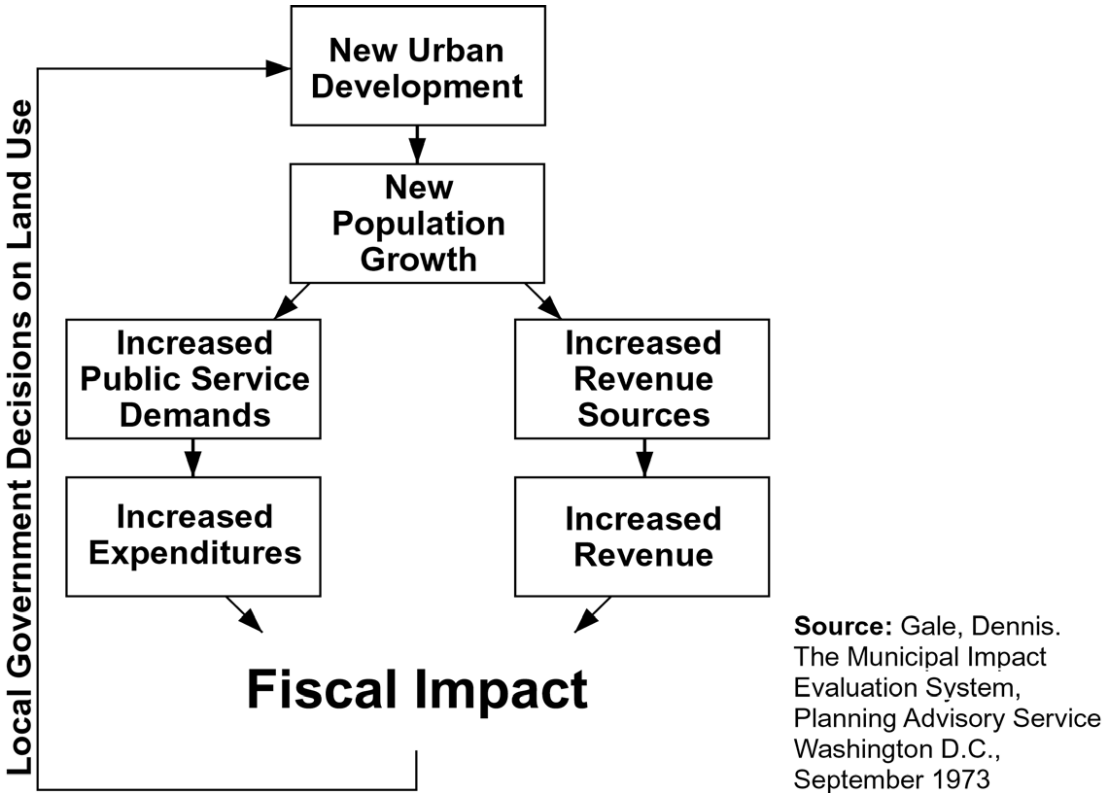
In September 2004, the City of Austin adopted Ordinance 040902-58 – University Neighborhood Overlay (UNO) District – for the West Campus area. The ordinance

was enacted based on the following three purposes derived from Smart Growth strategies. First, it helps make diverse community. This area has been famous for its Greek neighborhood, such as social fraternities and sororities. The ordinance intends to add new housing types which vary in density and are mixed in character. Second, it attracts more students to live near UT. In other words, the ordinance intends to make suitable density for student housing because the area can offer a convenient lifestyle, more feeling of university life, less transit costs, and better academic opportunities. Lastly, it makes pedestrian-oriented streets. The Parking Benefit District Pilot Program of the City of Austin (2006) is to encourage students to walk and bike, not drive. The first Parking Benefit District was established along San Antonio St, between MLK and West 26th Street, which is located in the study area, in January 2006. The revenue from the parking meters in the Parking Benefit District will go towards improving the pedestrian environment as the residential density of West Campus increases.

From 1984 to 2004, the zoning regulations of the West Campus area limited dense development. The new ordinance, however, allowed the increase of the height limit up to 175 feet and the maximum density up to 10 stories, which was more lenient than before. Tessyman reported this zoning change has brought new high-rise

developments in the area including the following: 12 new high-density apartments, 1,009 units, 2,800 new residents, 70,000 square feet of retail space, and a 1,100-spot parking garage (Tesseyman, 2006).

Figure 2 The Municipal Impact Evaluation System



Resource: Gale & Dennis, 1973.

1. Scope of Study

1) Boundaries of the Study Area

The West Campus area is bounded on the west by Lamar Street. The southern

boundary is Martin Luther King Jr. Boulevard and the eastern boundary is Guadalupe Street. The northern boundary is formed by 29th Streets. These boundaries conform to the description under University Neighborhood Overlay (UNO) District Requirements (The City of Austin, 2004).

2) The Time Period of the Study

I choose 2003 and 2008 or latest as the time period of the study, because the City of Austin adopted Ordinance 040902-58 – University Neighborhood Overlay (UNO) District – in 2004.

To examine the difference between before and after the ordinance, chosen fiscal years are budget year 2002-2003 and budget year 2007-2008 from the City of Austin Budget Office. For population projection, I also take the end of 2003 and 2008 respectively. Furthermore, some numbers have to concern inflation during the time period of the study, because this study operates over five years. All the 2003 dollar figures are converted to real terms of 2008 dollar when they need to be compared to 2008 dollar figures. In Table 7, values of 2007 and 2008 are estimated by quarterly data. In order to convert 2003 dollar figures to real 2008 dollar figures, I multiply 125.49% to 2003 dollar figures.

Table 7 Chain-type Price Indexes for Gross Domestic Product

(Index numbers, Year 2000 = 100)

Year	Government Consumption Expenditures and Gross Investment (State and local)
2003	109.712
2004	114.431
2005	121.758
2006	128.370
2007	(135.278)
2008	(137.675)

Resource: Economic Report of the President, February 2008.

3) Conditions of the Study

This study estimates only the difference between the cost of providing the public services which new residents require and the expected municipal income it generates. However, it would not assess the project's potentially negative and positive impacts on the neighborhood. It will not weigh the values of a heterogeneous community and an improved housing environment for residents against negative effects such as increased congestion. It also would not establish the maximum level of acceptable costs to the community by ascertaining which types of publicly assisted developments result in minimal local expenditures.

Fiscal impact analysis is based on the concept of net costs and net benefits to the community of new development or redevelopment, so what to include for

consideration is an important issue. It is very difficult as well as important. For example, among many city departments, some may not receive any impact from new development or redevelopment. Sometimes, along the type of development, attained revenues may vary. Dealing with every element is impossible.

In this study, the definition of net costs follows the City of Austin's: Administration Services, Urban Growth Management, Public Safety, Public Works, Public Health and Human Services, and Public Recreation and Culture. Concerning the costs, typical fiscal impact analysis does not concern capital costs, but deals with only operating costs represented in the general fund section of a city's budget. I do not account for any incremental capital costs. I provide a simply estimate based on operating expenditures for the City of Austin. I do not consider additional capital costs or expenses to other jurisdiction such as the school district.

Net benefits, by the definition of the City of Austin, are Taxes, Gross Receipts/Franchise Fees, Fines, Forfeitures, Penalties, Licenses, Permits, Inspections, Charges for Services, and Interest.

Utilities/Major Enterprises, such as Austin Energy, Austin Water Utility, or Aviation, are generally not considered, because they sustain their budgets with fees for service. Services beyond the City of Austin, such as Austin Independent School District, are

not considered either.

2. Demographics

Kelsey and Shields found that the impacts of development depended upon the number of new residents who would move into the area. In general, the more residents the greater the overall impact, thus, to do an economic impact study, we must estimate the increase of new residents (Kelsey & Shields, 2000).

Table 8 shows the population of total area of Austin. Austin's population was 687,708 in 2003 and is forecasted 750,525 in 2008.

Table 8 Austin Area Population Histories and Forecasts

Year	Population	Annualized Growth Rate
2000	656,562	3.5%
2001	669,693	2.0%
2002	680,899	1.7%
2003	687,708	1.0%
2004	692,102	0.64%
2005	700,407	1.20%
2006	718,912	2.64%
2007	735,088	2.25%
2008	750,525	2.10%

Resource: Ryan Robinson, January 2008.

Ryan Robinson, the City of Austin demographer, generated Comparative

Neighborhoods Data Program in order to produce a dataset offering comparative statistics for Neighborhood Planning Areas (NPAs). A population estimate for 2005 for each NPA is produced by accounting for new housing units added, by type of unit, for each NPA. All estimates for 2005 were added to the Census 2000 base. Robinson mentioned the West Campus area, one of NPAs, have added thousands of new housing units to its stock and the corresponding density calculations have changed dramatically (Robinson, 2005). Based on this comparative neighborhood data, I projected the 2003 and 2008 population by the extrapolation technique on an assumed geometric curve. Using the annual growth rate of 1.82%, the projected populations are as follows:

Table 9 West Campus Population Histories and Forecasts

Census 2000 Population	Estimate 2005 Population	Annual Growth Rate 00 to 2005	Estimate 2003 Population	Estimate 2008 Population
11,594	12,691	1.82%	12,240	13,398

Resource: Ryan Robinson, November 2005.

Table 9 shows the population of the West Campus area. Its population was estimated 12,240 in 2003 and 13,398 in 2008. The population of the study area has increased 9.46% in recent five years and it ranks at top for its gross population density per acre,

26.9 people per area. Robinson commented the West Campus University Neighborhood Overlay District plan allowed for significantly taller residential and mixed-use structures than were permitted in the past, resulting in far greater housing density in the area (Robinson, 2004). Furthermore, because many of construction projects in this area are in progress, there will likely be a major increase in population in the near future.

3. Expenditure Analysis

Population growth gives fiscal burden to municipalities who have to meet increasing demand for public services. In the City of Austin, there has been an increase of 4.16% in expenditures, in real dollar terms, and an increase of 8.79% in population from 2003 to 2008.

This direct proportion is not the determinant factor to explain the relation between population growth and municipal services. Nakosteen and Palma found that it was difficult to find the general equation or consistent trends in analyzing municipal expenditures because there could be some variation between local municipalities in how to do their categorization of expenditures. Thus, analyzing this data can only give an proximate picture of fiscal realities of municipalities (Nakosteen & Palma, 2003).

Table 10 Total Municipal Expenditures by Department, the City of Austin

Approved Budget	2002-03($)	Real 2008 $	2007-08 ($)	2003-08 Change (%)
Administrative Services				
Municipal Court	8,986,711	11,277,194	11,572,304	2.62
Subtotal	8,986,711	11,277,194	11,572,304	2.62
Urban Growth Management				
Neighborhood Planning & Zoning	3,998,756	5,017,937	5,313,429	5.89
Watershed Protection & Development Review	8,572,254	10,757,103	15,760,637	46.51
Subtotal	12,571,010	15,775,040	21,074,066	33.59
Public Safety				
Police	155,166,530	194,714,522	219,669,973	12.82
Fire	81,125,647	101,802,506	116,888,512	14.82
Emergency Medical Services	19,709,243	24,732,626	43,024,723	73.96
Public Safety and Emergency Management	N/A	N/A	5,937,064	N/A
Subtotal	256,001,420	321,249,654	385,520,272	20.01
Public Works				
Public Works and Transportation	0	0	N/A	N/A
Street Lighting	100,000	125,487	325,000	158.99
Transportation, Planning & Design	10,084,388	12,654,641	N/A	N/A
Subtotal	10,184,388	12,780,129	325,000	-97.46
Public Health and Human Services				
Health and Human Services	24,156,079	30,312,848	21,948,448	-27.59
FQHC Purchased Services	2,403,820	3,016,492	N/A	N/A
Medicaid Tax Payments	21,673,594	27,197,640	N/A	N/A
Hospital Contracted Services	8,396,277	10,536,274	N/A	N/A
Physician Services / Charity Care	10,502,000	13,178,692	N/A	N/A
Social Services Contracts	10,296,865	12,921,273	13,860,024	7.27
Expense Reimbursement	-21,673,594	-27,197,640	N/A	N/A
Subtotal	55,755,041	69,965,579	35,808,472	-48.82

Table 10 (continued)

Public Health				
Public Health Operating	2,456,054	3,082,040	N/A	N/A
Subtotal	58,211,095	73,047,619	N/A	N/A
Public Recreation and Culture				
Parks and Recreation	29,079,258	36,490,819	35,802,835	-1.89
Libraries	17,916,543	22,483,013	23,525,454	4.64
Subtotal	46,995,801	58,973,832	59,328,289	0.60
TOTAL EXPENDITURES	392,950,425	493,103,468	513,628,403	4.16

Resource: Budget Office of the City of Austin, 2003 & 2008.

Unfortunately, there is no convincing method to know the amount of expenditure in the West Campus area, because the City of Austin does not generate classified data about what amount of city budget was spent to a specific area. Thus, I estimate the amount of expenditure in the West Campus area by using an average costing method of per capita multiplier technique to show the provisional. Under this method, newly generated public service costs are calculated by multiplying the average cost per capita by the number of people induced by development.

Table 11 Provisional Spending (West Campus Area by Average Costing Method)

	Austin		West Campus	
Year	2003 (2008 Real $)	2008	2003 (2008 Real $)	2008
Population	687,708	750,525	12,240	13,398
Average Cost Per Capita	$717.02	$684.36	$717.02	$684.36
Expenditure	$493,103,468	$513,628,403	$8,776,380	$9,169,039

Table 11 tells the City of Austin spent $717.02 for a citizen in 2003, in real dollar terms, and will spend $684.36 in 2008. After applying average costs to the West Campus area, Table 11 shows residents in the area might spend $8,776,380 in 2003, in real dollar terms, and may spend $9,169,039 in 2008. As a result, the gap between 2003 and 2008, the increase of $392,660 (+4.47%) in five years, in real dollar terms, is supposed to be the expenditure that the City of Austin spends for the West Campus area.

4. Revenue Analysis

1) Total Revenues of the City of Austin

Local municipalities can collect more revenues as their population increases. In the City of Austin, there has been an increase of 3.73% in revenues, in real dollar terms, and an increase of 8.79% in population from 2003 to 2008.

However, like expenditure analysis, this direct proportion is not the determinant factor to explain the relation between population growth and municipal revenues.

Table 12 Total Municipal Revenues by Type, the City of Austin

Approved Budget	2002-03($)	Real 2008 $	2007-08 ($)	2003-08 Change (%)
Taxes				
General Property Taxes	151,470,380	190,076,317	186,180,172	-2.05
City Sales Tax	117,928,911	147,985,983	164,722,837	11.31
Other Taxes	3,852,000	4,833,777	5,247,000	8.55
Subtotal	273,251,291	342,896,077	356,150,009	3.87
Gross Receipts/Franchise Fees	28,287,474	35,497,230	32,189,147	-9.32
Fines, Forfeitures, Penalties	17,459,050	21,908,917	17,451,597	-20.34
Licenses, Permits, Inspections	15,770,801	19,790,376	24,431,401	23.45
Charges for Services	13,222,703	16,592,833	28,705,175	73.00
Interest and Other	14,251,235	17,883,511	12,606,318	-29.51
TOTAL REVENUES	362,242,554	454,568,944	471,533,647	3.73

Resource: Budget Office of the City of Austin, 2003 & 2008.

2) General Property Taxes from the Study Area

In order to estimate the amount of general property taxes, I collect information of property values of 1,990 taxable parcels in the West Campus area. The data came from the Travis Central Appraisal District (TCAD). Unfortunately, TCAD does not generate classified data about total property values in a specific area. The City of Austin also does not generate classified data for the amount of property tax gathered in a specific area. Thus, we need data processing work to know the amount of property tax gathered in the study area.

Table 13 The Change of Total Property Value

	2003	Real 2008 $	2008	2003-08 Change
Total Property Value	$426,648,686	$535,390,557	$781,363,368	$245,972,811

Table 13 tells the sum of taxable property values in the West Campus area was $535,390,557 in 2003, in real dollar terms, and $781,363,368 in 2008. The gap between 2003 and 2008, the increase of $245,972,811 (+45.94%) in five years, in real dollar terms, is supposed to be linked with the land use change. It is a very steep increase compared to the Austin's total property value increase of $4.45B (+6.98%) in same period (See Figure 2), in real dollar terms. In five years, only 62 parcels among 1990 parcels have decreased in property values.

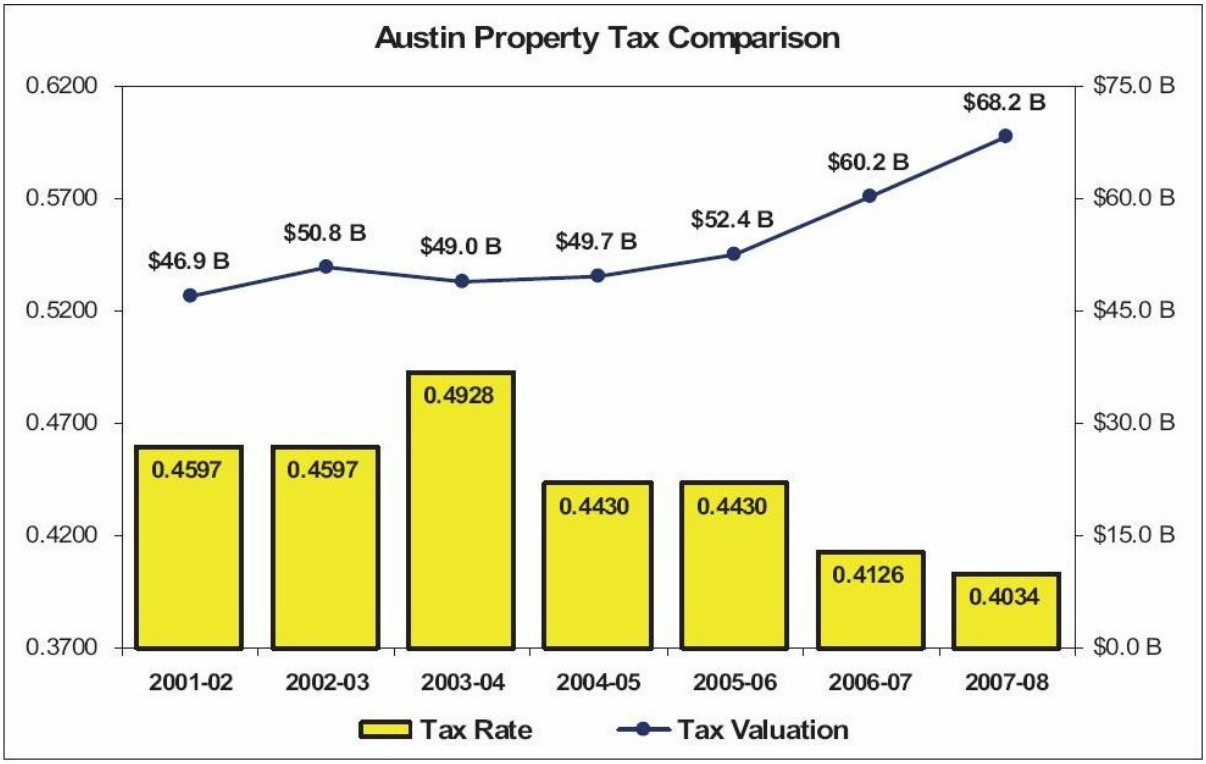
Table 14 The Change of Total Property Value (Existing Properties)

	2003	Real 2008 $	2008	2003-08 Change
Total Property Value	$426,648,686	$535,390,557	$719,750,791	$184,360,234

Examining the data of taxable property values, there are 244 newly developed parcels in the area. They did not exist in 2003, but their new values amount to $61,612,577. Table 10 tells the sum of taxable property values in the West Campus area was $535,390,557 in 2003, in real dollar terms, and these properties' recent values amount to $719,750,791. The increase of $184,360,234 (+34.43%) in five years, in real dollar

terms, means the existing properties values have been affected by the land use change.

Figure 3 Austin Property Tax Comparison



Resource: Budget Office of the City of Austin, 2008.

Figure 3 demonstrates change of tax valuation and change of tax rate of Austin. Austin's property tax rate was 0.4597 cent in 2003 and will be 0.4034 cent in 2008. All rates are shown per $100 of assessment. Given tax rates, Table 15 tells the property tax gathered from the study area.

Table 15 Property Tax from the Study Area

	2003	Real 2008 $	2008	2003-08 Change
Total Taxable Property Value	$426,648,686	$535,390,557	$781,363,368	$245,972,811
Property Tax Rate	0.4597%	0.4597%	0.4034%	
Property Tax	$1,961,304	$2,461,190	$3,152,020	$690,830

3) Sales Taxes from the Study Area

Using Table 16, prepared by the Office of the Texas Comptroller of Public Accounts, I made Table 17 which contains 2008 estimated sales report based on recent five year average. The development of most UNO area is not a retail or industrial but residential, so the analysis of sales tax effects is indirect. This section is not a key element of the whole analysis, so it just expects some indirect effects of spending from new residents.

Table 16 The Sales History Report

Year	Quarter	Gross Sales	Amount Subject to State Sales Tax
2003	1	$85,372,430	$48,075,026
	2	$77,339,173	$40,859,568
	3	$90,484,019	$53,790,026
	4	$107,666,475	$45,983,871
	Subtotal	$360,862,097	$188,708,491
2004	1	$85,899,092	$49,266,950
	2	$79,800,238	$42,469,157
	3	$93,675,613	$55,467,754
	4	$138,366,728	$53,220,129

Table 16 (continued)

	Subtotal	$397,741,671	$200,423,990
2005	1	$94,375,578	$49,639,090
	2	$86,967,784	$42,541,552
	3	$99,925,723	$55,500,437
	4	$117,440,916	$50,451,167
	Subtotal	$398,710,001	$198,132,246
2006	1	$130,139,828	$61,802,540
	2	$135,321,730	$47,113,056
	3	$123,894,265	$61,298,300
	4	$210,987,413	$58,330,743
	Subtotal	$600,343,236	$228,544,639
2007	1	$179,368,527	$57,465,712
	2	$152,450,834	$53,559,123
	3	$158,838,330	$65,658,157

Resource: the Office of the Texas Comptroller of Public Accounts, 2008.

Table 17 2008 Estimated Sales Report

Year	Quarter	Gross Sales	Amount Subject to State Sales Tax
2007	4	$266,329,657	$61,009,566
	Subtotal	$756,987,348	$237,692,558
2008	1	$218,026,059	$60,442,607
	2	$183,101,808	$57,380,282
	3	$183,613,309	$69,062,039
	4	$345,745,821	$65,698,816
	Subtotal	$930,486,999	$252,583,746

According to the City of Austin, sales tax is collected by businesses at the time of the sale and then paid to the Texas Comptroller of Public Accounts. The State collects 8¼ cents for every dollar spent in retail sales, and then, the State keeps 6¼ cents, 1 cent is

paid to the City of Austin, and 1 cent is paid to the Capital Metro Mass Transit Authority (The City of Austin, 2008).

Table 18 Total Sales Tax from the Study Area

	2003	Real 2008 $	2008	2003-08 Change
Amount Subject to State Sales Tax	$188,708,491	$236,805,473	$252,583,746	$15,778,273
Sales Tax (1 cent for every dollar)	$1,887,084	$2,368,054	$2,525,837	$157,783

Table 18 tells the sales taxes gathered from the West Campus area could be $2,368,054 in 2003, in real dollar terms, and can be $2,525,837 in 2008. The gap between 2003 and 2008, the increase of $157,783 (+6.66%) in five years, in real dollar terms, may be due to the land use change. It is not equal to, but is similar with the increasing trend of total sales taxes of the City of Austin (+11.31%).

4) Miscellaneous Revenues

I estimate the amount of miscellaneous revenues except property tax and sales tax from the West Campus area through the same way used in the expenditure estimation. Miscellaneous revenues include other taxes except property tax and sales tax, gross receipts/franchise fees, fines, forfeitures, penalties, licenses, permits, inspections,

charges for services, and interest. Table 19 shows the provisional miscellaneous revenues from the West Campus area. Newly generated revenues are calculated by multiplying the average revenue per capita by the number of people induced by development.

Table 19 Provisional Miscellaneous Revenues from the Study Area

	Austin		West Campus	
Year	2003 (2008 Real $)	2008	2003 (2008 Real $)	2008
Population	687,708	750,525	12,240	13,398
Average Miscellaneous Revenues Per Capita	$169.41	$160.73	$169.41	$160.73
Miscellaneous Revenue	$116,506,644	$120,630,638	$2,073,615	$2,153,438

Table 19 tells the City of Austin gathered $169.41 of miscellaneous revenues for a citizen in 2003, in real dollar terms, and will gather $160.73 in 2008. Table 19 also shows residents in the study area might pay $2,073,615 in 2003, in real dollar terms, and may pay $2,153,438 in 2008, increase of $79,824.

VI. Conclusion

In terms of the balance between revenues and expenditures, the balance over five years is (+) $535,777 in 2008 real dollar. Table 20 summarizes the fiscal impact analysis of the study area.

Table 20 Fiscal Impact Analysis Summary

Expenditure Increase	Revenue Increase	Balance	Land Use Ratio
$392,660	$928,437	(+) $535,777	0.42

Land use ratio is an amount of expenditure for each $1 of revenue generated. According to some Cost of Community Services studies, which examine the interplay among land use and local spending and revenues, the land use ratio of residential land use is bigger than $1.00, because revenues from residential development often do not pay for public service costs which residents receive from the municipality. This is the why we need balance of land use types, among residential uses, industrial uses, commercial uses, agricultural uses, etc. For example, in every community studied by American Farmland Trust, agricultural land uses generated a fiscal surplus to help offset the shortfall created by residential demand for public services. American Farmland Trust found the land use ratio of residential land use was 1.07 in Bedford

County, Virginia (American Farmland Trust, 2005). Edwards found the land use ratio of residential land use was between 1.02-1.30 in Door County, Wisconsin (Edwards, 2004).

However, in the West Campus area, even though it is mostly developed as residential area, the ratio is much smaller than $1.00, which means revenues from the residents cover expenditures of the area.

There are two potential reasons for this situation. First, the positive fiscal impacts of the study area originate from the increase of new residents and new housing constructions, and especially from the steep increase of 45.94% in property values of the study area. Ordinance 040902-58 – University Neighborhood Overlay (UNO) District – unleashes the area from the stiff regulation and to flexible housing market. It is rather inciting development to come into the area.

Second, the Ordinance 040902-58 calls for redevelopment in the existing residential area, not whole new development in the undeveloped lands. The City of Austin can take advantage of the existing infrastructure of the West Campus area, which is fiscally better than constructing new infrastructure in the undeveloped lands. It coincides with the viewpoint of smart growth which aims for more efficient growth and more benefits by shifting some edge development into previously developed areas.

However, this incomplete fiscal impact study can not judge the overall public good or long-term fiscal benefits of redevelopment of the West Campus area. One of limitations of the study is that in terms of conditions used, it excluded some elements in revenues and expenditures, such as capital budgets, utility services, Austin Independent School District, and some others. For the study more reliable, it would be necessary to get them into the study. There could be costs which should not be neglected from the City of Austin Capital Budget, Austin Independent School District, and there could be revenues from utility services.

Some limitations of the study also came from analysis methods. When calculating costs, I used average costing methods which is easy to apply and most often used. However, these methods are less accurate compared to marginal costing methods. They neglect additional costs of new development, and also do not count additional costs of dense development. Furthermore, average costing methods could not reflect characters of the study area. For example, most of residents in the study area are students who have few school age children to care, but call for some other services like Public Safety services.

It is up to planners and citizens to balance their budget through land use changes. My study is an example of how land use regulation change under smart growth gives

impacts to a municipal budget, and it recommends planners that planners refer to reliable fiscal impact analysis in order to ensure fiscal stability of a municipality.

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VITA

Kyusuk Cho was born in Daejon, Korea on January 7, 1980. He is the son of Kyehwan Cho and Jongkyung Hong. After graduating from Daejon Science High School, Daejon, Korea in 1998, he entered the Seoul National University, Seoul, Korea where he received a Bachelor of Sciences in Engineering in February 2002. In August 2006, he entered the Community and Regional Planning Program at the School of Architecture at the University of Texas at Austin.

Permanent Address: Daewoo Prugio Apt. 210 - 1702

Kwanpyung-dong, Yousung-gu, Daejon, Korea

This dissertation was typed by Kyusuk Cho.